

WHAT IS CLAIMED IS:

1. A method for caching domain name system information in a network gateway that includes a customer premises equipment interface, a network interface, and a cache for storing domain names and corresponding IP addresses, comprising:

receiving a domain name system query from a customer premises equipment over the customer premises equipment interface, said query including an unresolved domain name;

determining if said unresolved domain name is stored in the cache;

if said unresolved domain name is stored in the cache, obtaining an IP address corresponding to said unresolved domain name from the cache, generating a response to said query that includes said IP address corresponding to said unresolved domain name, and providing said response to the customer premises equipment interface for transmission to said customer premises equipment; and

if said unresolved domain name is not stored in said cache, providing said query to the network interface for transmission to a network for resolution of said query.

2. The method of claim 1, further comprising:

receiving a domain name system response from said network over the network interface, said response including a response domain name and an IP address corresponding to said response domain name;

storing said response domain name and said IP address corresponding to said response domain name in the cache; and

providing said response to the customer premises equipment interface for transmission to said customer premises equipment.

3. The method of claim 1, further comprising:

loading the cache with a preliminary set of domain names and corresponding IP addresses prior to said receiving said domain name system query.

4. The method of claim 3, wherein said loading is initiated by an entity on said network.

5. The method of claim 3, wherein said loading is initiated by said customer premises equipment.

6. The method of claim 1, further comprising:
continuously monitoring packets received by the customer premises equipment interface from said customer premises equipment to identify domain name system queries.

7. The method of claim 6, wherein said continuous monitoring comprises examining a protocol header field of said packets received by the customer premises equipment interface from said customer premises equipment to identify domain name system messages.

8. The method of claim 7, wherein said continuous monitoring further comprises examining a parameter field of said domain name system messages received by the customer premises equipment interface from said customer premises equipment to identify domain name system queries.

9. The method of claim 2, further comprising:
continuously monitoring packets received by the network interface from said network to identify domain name system responses.

10. The method of claim 9, wherein said continuous monitoring comprises examining a protocol header field of said packets received by the network interface from said network to identify domain name system messages.

11. The method of claim 10, wherein said continuous monitoring further comprises examining a parameter field of said domain name system messages received by the network interface from said network to identify domain name system responses.

12. A method for caching domain name system information in a network gateway that includes a customer premises equipment interface, a network interface, and a cache for storing domain names and corresponding IP addresses, comprising:

receiving a domain name system response from a network over the network interface, said response including a response domain name and an IP address corresponding to said response domain name;

storing said response domain name and said IP address corresponding to said response domain name in the cache; and

providing said response to the customer premises equipment interface for transmission to a customer premises equipment.

13. The method of claim 12, further comprising:
continuously monitoring packets received by the network interface from said network to identify domain name system responses.

14. The method of claim 13, wherein said continuous monitoring comprises examining a protocol header field of said packets received by the network interface from said network to identify domain name system messages.

15. The method of claim 14, wherein said continuous monitoring further comprises examining a parameter field of said domain name system messages received by the network interface from said network to identify domain name system responses.

16. A method for caching domain name system information in a network gateway that includes a customer premises equipment interface, a network interface, and a cache for storing domain names and corresponding IP addresses, comprising:

receiving a domain name system response from a network over the network interface;

determining if said response includes a response domain name and an IP address corresponding to said response domain name;

if said response includes a response domain name and an IP address corresponding to said response domain name, storing said response domain name and said IP address corresponding to said response domain name in the cache, and providing said response to the customer premises equipment interface for transmission to a customer premises equipment; and

if said response does not include a response domain name and an IP address corresponding to said response domain name, providing said response to the customer premises equipment interface for transmission to said customer premises equipment without storing any information in the cache.

17. A network gateway, comprising:

a memory, said memory comprising a cache that stores domain names and corresponding IP addresses;

a customer premises equipment interface that receives a domain name system query from a customer premises equipment, said query including an unresolved domain name;

a network interface that communicates with a network; and

a processor coupled to said memory, said customer premises equipment interface, and said network interface, said processor configured to receive said domain name system query from said customer premises equipment and to determine if said unresolved domain name is stored in said cache;

wherein said processor is further configured to obtain an IP address corresponding to said unresolved domain name from said cache, generate a response to said query that includes said IP address corresponding to said unresolved domain name, and provide said response to said customer premises equipment interface for transmission to said customer premises equipment, if said unresolved domain name is stored in said cache; and

wherein said processor is further configured to provide said query to said network interface for transmission to a network for resolution of said query if said unresolved domain name is not stored in said cache.

18. The network gateway of claim 17 wherein:

said network interface is adapted to receive a domain name system response from said network, said response including a response domain name and an IP address corresponding to said response domain name; and

wherein said processor is further configured to store said response domain name and said IP address corresponding to said response domain name in said cache and provide said response to said customer premises equipment interface for transmission to said customer premises equipment.

19. The network gateway of claim 17, wherein said customer premises equipment interface is a home phoneline network interface, an Ethernet interface, or a Universal Serial Bus interface.

20. The network gateway of claim 17, wherein said network interface comprises a cable modem system interface.

21. The network gateway of claim 17, wherein said memory comprises an SDRAM.

22. The network gateway of claim 17, wherein said processor is further configured to continuously monitor packets received by said customer premises equipment interface from said customer premises equipment to identify domain name system queries.

23. The network gateway of claim 18, wherein said processor is further configured to continuously monitor packets received by said network interface from said network to identify domain name system responses.

24. A network gateway, comprising:

a memory, said memory comprising a cache that stores domain names and corresponding IP addresses;

a customer premises equipment interface that communicates with a customer premises equipment;

a network interface that receives a domain name system response from a network, said response including a response domain name and an IP address corresponding to said response domain name; and

a processor coupled to said memory, said customer premises equipment interface, and said network interface, said processor configured to store said response domain name and said IP address corresponding to said response domain name in said cache and provide said response to the customer premises equipment interface for transmission to a customer premises equipment.

25. The network gateway of claim 24, wherein said processor is further configured to continuously monitor packets received by said network interface from said network to identify domain name system responses.

26. A network gateway, comprising:

a memory, said memory comprising a cache that stores domain names and corresponding IP addresses;

a customer premises equipment interface that communicates with a customer premises equipment;

a network interface that receives a domain name system response from a network; and

a processor coupled to said memory, said customer premises equipment interface, and said network interface, said processor configured to receive said response from said network interface and determine if said response includes a response domain name and an IP address corresponding to said response domain name;

wherein said processor is further configured such that, if said response includes a response domain name and an IP address corresponding to said response domain name, said processor stores said response domain name and said IP address corresponding to said response domain name in said cache and provides said response to said customer premises equipment interface for transmission to said customer premises equipment; and

wherein said processor is further configured such that, if said response does not include a response domain name and an IP address corresponding to said response domain name, said processor provides said response to said customer premises equipment interface for transmission to said customer premises equipment without storing any information in said cache.

27. A computer program product comprising a computer useable medium having computer program logic for enabling a processor in a network gateway to perform caching of domain name system information, said network gateway further including a customer premises equipment interface, a network interface, and a cache for storing domain names and corresponding IP addresses, comprising:

means for enabling the processor to receive a domain name system query from said customer premises equipment interface, said query including an unresolved domain name;

means for enabling the processor to determine if said unresolved domain name is stored in the cache;

means for enabling the processor to obtain an IP address corresponding to said unresolved domain name from the cache, generate a response to said query that includes said IP address corresponding to said unresolved domain name, and provide said response to the customer premises equipment interface, if said unresolved domain name is stored in the cache; and

means for enabling the processor to provide said query to the network interface if said unresolved domain name is not stored in the cache.

28. The computer program product of claim 27, further comprising:

means for enabling the processor to receive a domain name system response from the network interface, said response including a response domain name and an IP address corresponding to said response domain name;

means for enabling the processor to store said response domain name and said IP address corresponding to said response domain name in the cache; and

means for enabling the processor to provide said response to the customer premises equipment interface.

29. The computer program product of claim 27, further comprising:

means for enabling the processor to load the cache with a preliminary set of domain names and corresponding IP addresses prior to receiving any domain name system queries from the customer premises equipment interface.

30. The computer program product of claim 27, further comprising:

means for enabling the processor to continuously monitor packets received from the customer premises equipment interface to identify domain name system queries.

31. The computer program product of claim 28, further comprising:
means for enabling the processor to continuously monitor packets received from the network interface to identify domain name system responses.

32. A computer program product comprising a computer useable medium having computer program logic for enabling a processor in a network gateway to perform caching of domain name system information, the network gateway further including a customer premises equipment interface, a network interface, and a cache for storing domain names and corresponding IP addresses, comprising:

means for enabling the processor to receive a domain name system response from the network interface, said response including a response domain name and an IP address corresponding to said response domain name;

means for enabling the processor to store said response domain name and said IP address corresponding to said response domain name in the cache; and

means for enabling the processor to provide said response to the customer premises equipment interface.

33. The computer program product of claim 32, further comprising:
means for enabling the processor to continuously monitor packets received from the network interface to identify domain name system responses.